

Table of Contents

Activity Recognition

Activity Recognition from User-Annotated Acceleration Data	1
<i>Ling Bao, Stephen S. Intille</i>	
Recognizing Workshop Activity Using Body Worn Microphones and Accelerometers	18
<i>Paul Lukowicz, Jamie A Ward, Holger Junker, Mathias Stäger, Gerhard Tröster, Amin Atrash, Thad Starner</i>	
“Are You with Me?” – Using Accelerometers to Determine If Two Devices Are Carried by the Same Person	33
<i>Jonathan Lester, Blake Hannaford, Gaetano Borriello</i>	

Context Computing

Context Cube: Flexible and Effective Manipulation of Sensed Context Data	51
<i>Lonnie Harvel, Ling Liu, Gregory D. Abowd, Yu-Xi Lim, Chris Scheibe, Chris Chatham</i>	
A Context-Aware Communication Platform for Smart Objects	69
<i>Frank Siegemund</i>	
Siren: Context-Aware Computing for Firefighting	87
<i>Xiaodong Jiang, Nicholas Y. Chen, Jason I. Hong, Kevin Wang, Leila Takayama, James A. Landay</i>	

Near Body Interfaces

Spectacle-Based Design of Wearable See-Through Display for Accommodation-Free Viewing	106
<i>Marc von Waldkirch, Paul Lukowicz, Gerhard Tröster</i>	
A Compact Battery-Less Information Terminal for Real World Interaction	124
<i>Takuichi Nishimura, Hideo Itoh, Yoshiyuki Nakamura, Yoshinobu Yamamoto, Hideyuki Nakashima</i>	

Software

INCA: A Software Infrastructure to Facilitate the Construction and Evolution of Ubiquitous Capture and Access Applications	140
<i>Khai N. Truong, Gregory D. Abowd</i>	

Sensors

Activity Recognition in the Home Using Simple
and Ubiquitous Sensors 158
Emmanuel Munguia Tapia, Stephen S. Intille, Kent Larson

Automatic Calibration of Body Worn Acceleration Sensors 176
Paul Lukowicz, Holger Junker, Gerhard Tröster

Reject-Optional LVQ-Based Two-Level Classifier
to Improve Reliability in Footstep Identification 182
Jaakko Suutala, Susanna Pirttikangas, Jukka Riekkki, Juha Rönning

Issues with RFID Usage in Ubiquitous Computing Applications 188
Christian Floerkemeier, Matthias Lampe

Security

A Fault-Tolerant Key-Distribution Scheme for Securing Wireless
Ad Hoc Networks 194
Arno Wacker, Timo Heiber, Holger Cermann, Pedro José Marrón

ProxNet: Secure Dynamic Wireless Connection by Proximity Sensing 213
Jun Rekimoto, Takashi Miyaki, Michimune Kohno

Tackling Security and Privacy Issues in Radio Frequency
Identification Devices 219
Dirk Henrici, Paul Müller

Architectures and Systems

Towards Wearable Autonomous Microsystems 225
*Nagendra B. Bharatula, Stijn Ossevoort, Mathias Stäger,
Gerhard Tröster*

Ubiquitous Chip: A Rule-Based I/O Control Device
for Ubiquitous Computing 238
*Tsutomu Terada, Masahiko Tsukamoto, Keisuke Hayakawa,
Tomoki Yoshihisa, Yasue Kishino, Atsushi Kashitani, Shojiro Nishio*

eSeal – A System for Enhanced Electronic Assertion
of Authenticity and Integrity 254
*Christian Decker, Michael Beigl, Albert Krohn, Philip Robinson,
Uwe Kubach*

Algorithms

A Distributed Precision Based Localization Algorithm
for Ad-Hoc Networks 269
Leon Evers, Stefan Dulman, Paul Havinga

Adaptive On-Device Location Recognition	287
<i>Kari Laasonen, Mika Raento, Hannu Toivonen</i>	
Accommodating Transient Connectivity in Ad Hoc and Mobile Settings	305
<i>Radu Handorean, Christopher Gill, Gruia-Catalin Roman</i>	
New Interfaces	
Microbiology Tray and Pipette Tracking as a Proactive Tangible User Interface	323
<i>Harlan Hile, Jiwon Kim, Gaetano Borriello</i>	
Augmenting Collections of Everyday Objects: A Case Study of Clothes Hangers as an Information Display	340
<i>Tara Matthews, Hans-W. Gellersen, Kristof Van Laerhoven, Anind K. Dey</i>	
MirrorSpace: Using Proximity as an Interface to Video-Mediated Communication	345
<i>Nicolas Roussel, Helen Evans, Heiko Hansen</i>	
SearchLight – A Lightweight Search Function for Pervasive Environments	351
<i>Andreas Butz, Michael Schneider, Mira Spassova</i>	
Author Index	357